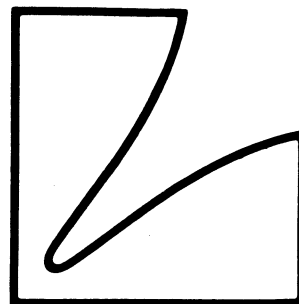


SERVICE MANUAL

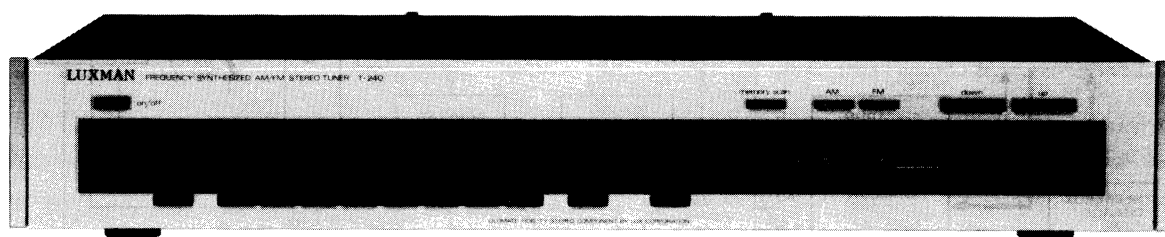


FREQUENCY SYNTHESIZED AM FM STEREO TUNER

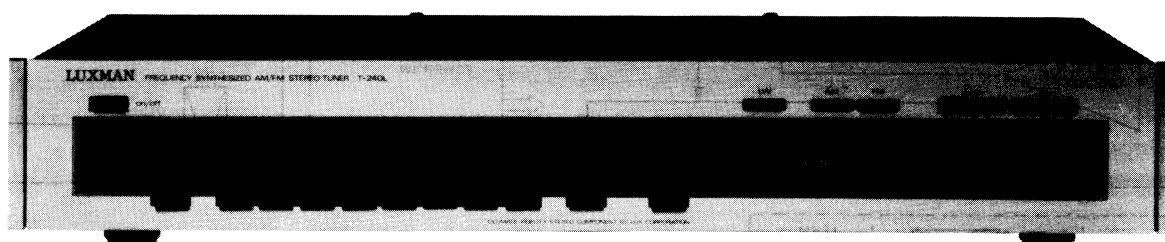
T-240/T-240L

T-240/T-240L

T-240/T-240L



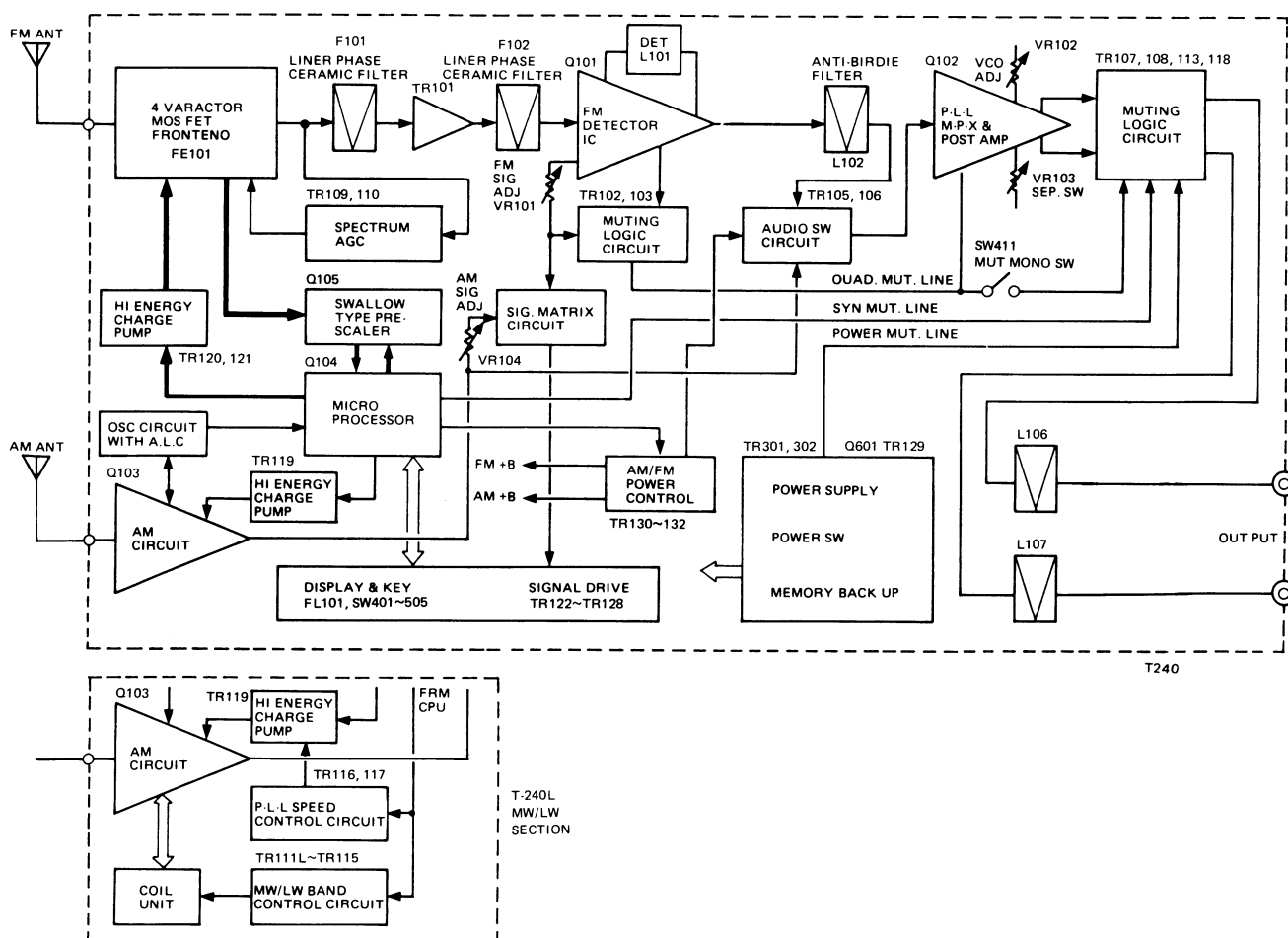
T-240



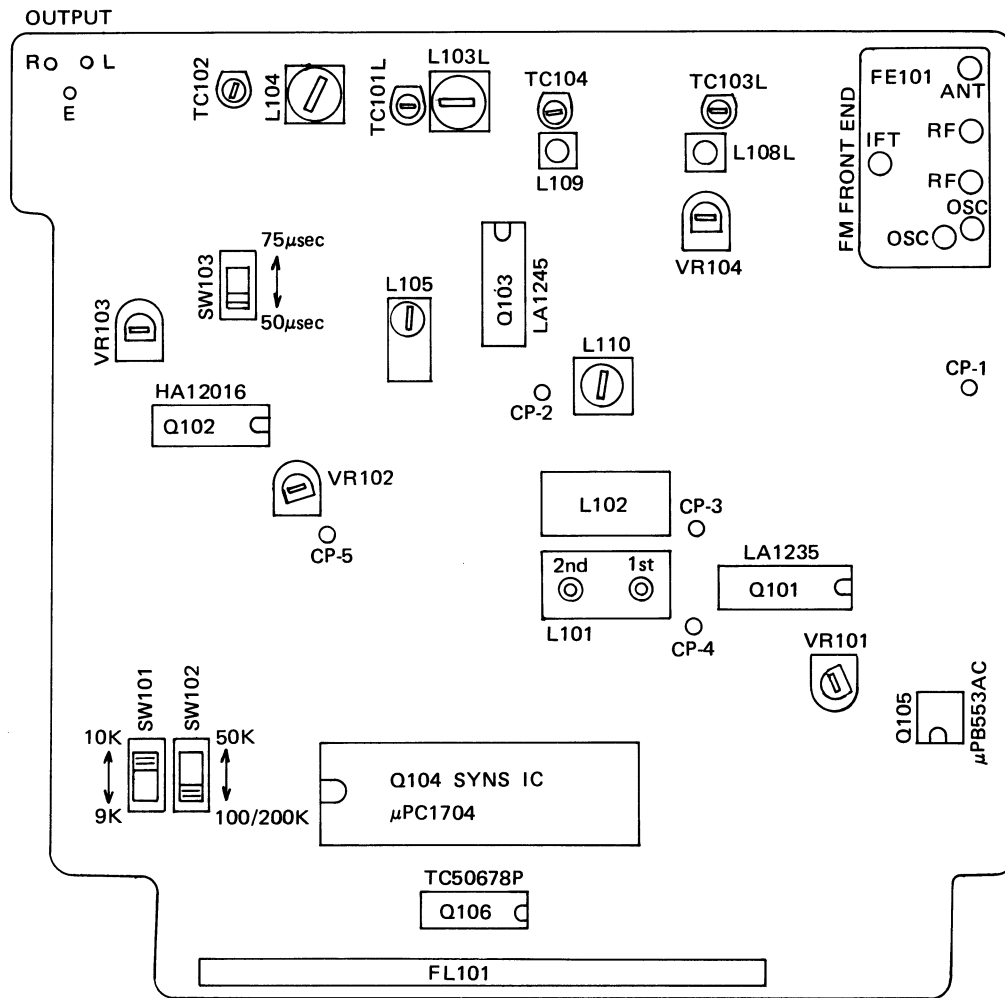
T-240L

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Adjustment Locations



TC101L.LW ANT. TRIMMER
 L103L.LW ANT. COIL
 TC103L.LW OSC TRIMMER
 L108L.LW OSC COIL
 TC102.MW ANT. TRIMMER
 L104.MW ANT. COIL
 TC104.MW OSC TRIMMER
 L109.MW OSC COIL
 VR104.AM SIGNAL METER ADJ.
 L110.AM IFT

L105.AM CERAMIC FILTER
 CP-2.AM AUDIO OUTPUT POINT
 VR101.FM MUTE & SIGNAL METER ADJ.
 CP-3, CP-4.CENTER METER CHECK POINT
 L101.FM DETECTOR
 CP-5.MPX VCO CHECK POINT
 VR102.MPX VCO ADJ.
 VR103.MPX STEREO SEPARATION ADJ.
 FE101 IFT.STEREO DISTORTION ADJ.
 CP-1.AM TUNING VOLTAGE CHECK POINT

Adjustment Procedures

NOTE

Do not adjust this unit unless absolutely necessary. The following adjustments should NOT be performed unless the technician (This means you!), has a thorough understanding of the circuitry and principals involved AND has proper test equipment. If these conditions are not met, it is quite likely any adjustments made will degrade performance and potentially affect reliability.

1. Unit should be connected to an AC power source. Push power switch on and allow unit to warm up for 5 minutes.

AM ALIGNMENT

2. In order to properly align the AM section of the T-240, an AM sweep generator is necessary. If you do not have this type of test equipment, please do not attempt to align the unit.
 - a. Activate the AM function button. (MW on T-240L)
 - b. Connect the output of the AM sweep generator to the AM antenna terminal on the T-240, Connect the input of the sweep generator to CP2. The output of the sweep generator should be between 20–50dB/μV.
 - c. Adjust L105 and L110 maximum symmetrical single peak response of the 450KHz signal.
 - d. Connect DC voltmeter to CP1 and ground.
 - e. Set the AM signal generator for 600KHz (603KHz for european version), 400Hz tone at 30% modulation, 60dB/m output. Set the T-240 for 600KHz (603KHz for european version). Adjust L109 to obtain 2.0 volts.
 - f. Change frequency on the generator and the T-240 to 1400KHz (1404KHz for european version). Adjust TC104 to obtain 7.0 volts.
 - g. Because these controls interact with each other, steps e and f should be repeated to obtain the desired voltages. Remove the voltmeter.
 - h. Change the frequency on the generator and the T-240 to 600KHz (603KHz for european version). Adjust L104 for maximum output.
 - i. Again change the frequency on the generator and the T-240 to 1400KHz (1404KHz for european version). Adjust TC102 for maximum output.
 - j. Because these controls interact with each other, steps h and i should be repeated several times for best performance.
 - k. Set the AM signal generator for 1000KHz (999KHz for european version), 400Hz tone at 30% modulation and 80dB/m output. Set the T-240 at 1000KHz (999KHz for european version). Adjust VR104 so the signal strength fluorescent display is fully lighted (all 5 segments). The 5th segment should just be lighted.
 - l. Confirm the tuning operation in 10KHz (9KHz in european models) increments using the up/down tuning buttons from 530KHz (522KHz for european version) to 1620KHz (1611KHz for european version).

LW ALIGNMENT T-240L

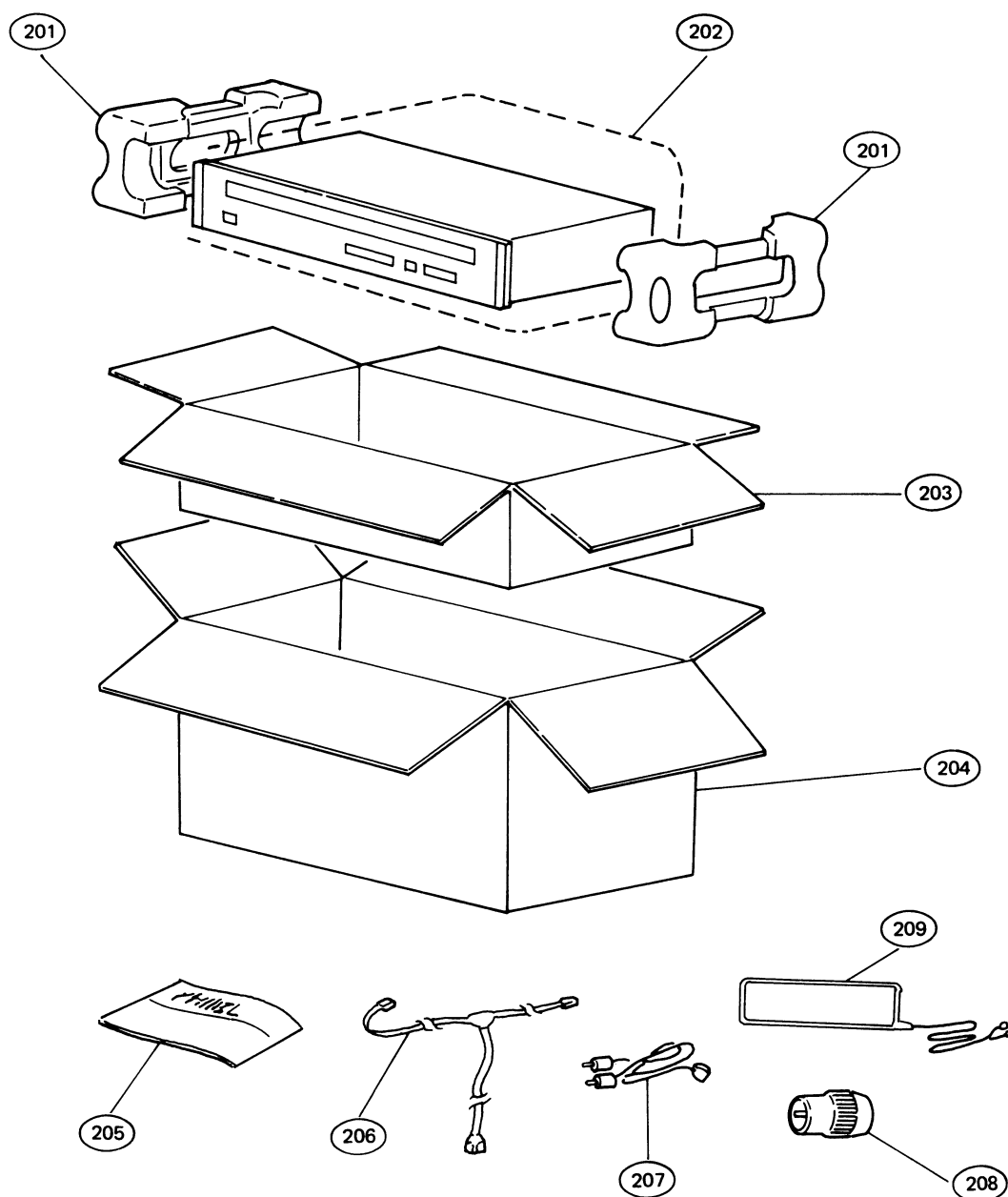
- m. Set the AM signal generator for 155KHz, 400Hz tone at 30% modulation, 60dB/m output. Set the T-240L for 155KHz. Adjust L108L to obtain 2.0 volts.
- n. Change frequency on the generator and the T-240L to 281KHz. Adjust TC103L to obtain 7.0 volts.
- o. Because these controls interact with each other, steps m and n should be repeated to obtain the desired voltages. Remove the voltmeter.
- p. Change the frequency on the generator and the T-240L to 182KHz. Adjust L103L for maximum output.
- q. Again change the frequency on the generator and the T-240L to 264KHz. Adjust TC101L for maximum output.
- r. Because these controls interact with each other, steps p and q should be repeated several times for best performance.
- s. Confirm the tuning operation in 9KHz increments using the up/down tuning buttons from 155KHz to 281KHz.

3. FM ALIGNMENT

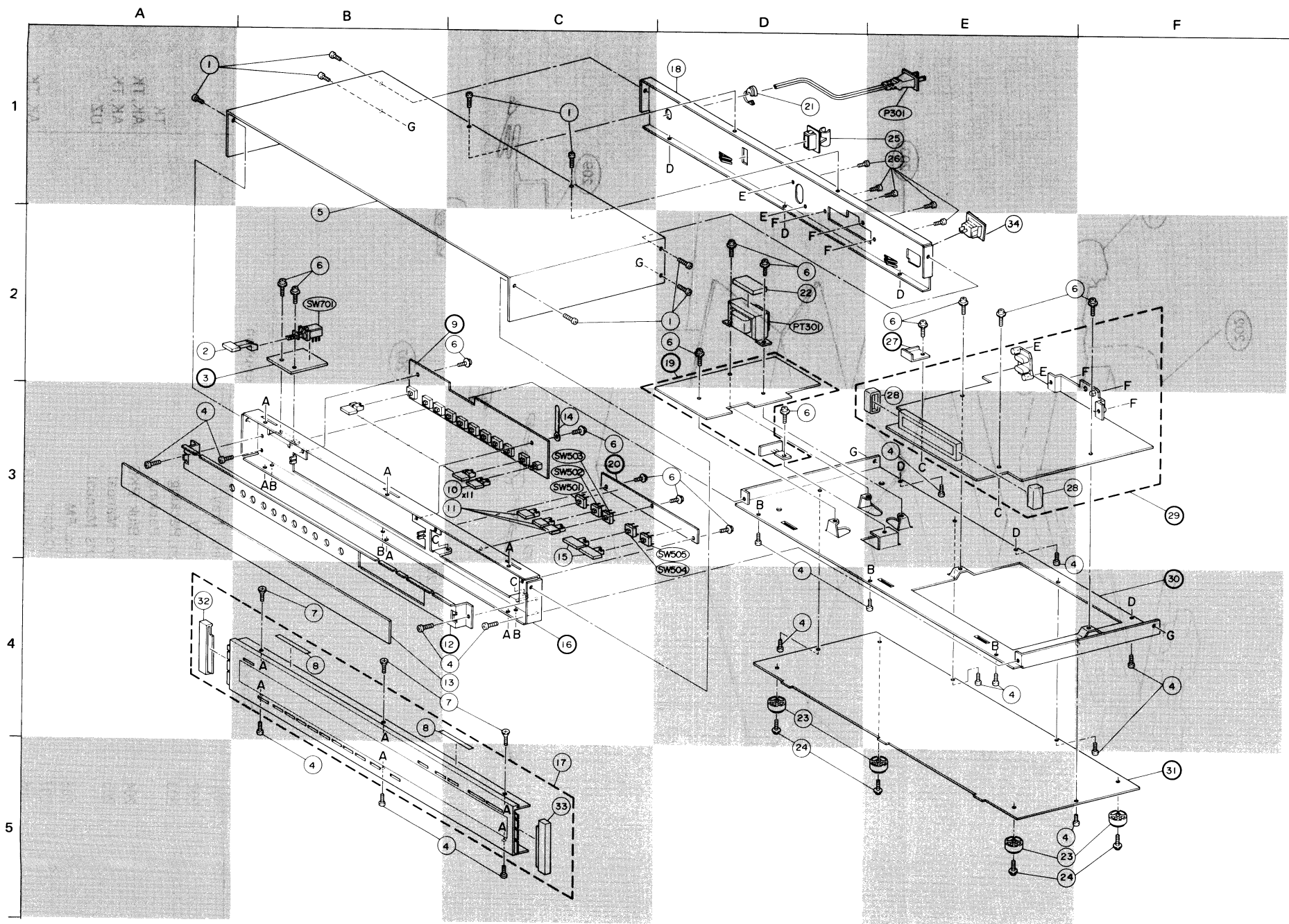
Proper alignment of the FM circuitry is critical. In order to obtain maximum performance, DO NOT adjust any FM circuitry unless you have a stable high quality FM signal generator with an external FM multiplex composite signal modulator. Alignment attempts without using the above type of equipment will likely degrade the units performance.

- a. With the unit on, turn to 98.1MHz.
- b. Connect the FM signal generator output to the antenna 300ohm terminals on the back of the T-240.
- c. Set the FM signal generator for a 98.1MHz, 1KHz 100% modulated monaural signal and 3000 micro-volt output (75dBf).
- d. Connect a digital voltmeter to CP3 and CP4 and adjust L101 primary for "0" reading position on the center meter, the slug to adjust is the one closest to IC (LA1235).
- e. Adjust the secondary of L101 minimum distortion.
- f. Adjust L101 (primary) again for "0" reading on the center meter. Repeat 2 or 3 times for best performance (minimum distortion).
- g. With the mute switch off on the T-240, feed into the antenna terminals 5 micro-volts (22dBf), and adjust VR101 for perfect symmetrical waveform.
- h. Gradually increase the FM signal generator and verify that the 5 segment signal strength meter lights up to the 5th segment.
- i. With a frequency counter connected to CP5 and chassis ground, and no RF input to the antenna terminals, adjust VR102 for free run frequency of the PLL circuit (76KHz + or – 10Hz).
- j. With the FM signal generator set at 98.1MHz, 1KHz, 100% modulated stereo signal (mode L or R), 3000 micro-volt output (75dBf), and with a 10% pilot level, confirm that the stereo light is on.
- k. Confirm that the stereo light goes out when the muting off switch is pushed.
- l. Adjust the front end IF coil + or – 1/2 turn for minimum distortion. Repeat step e through h for minimum distortion.
- m. The stereo separation should be over 45dB, if VR103 is correctly adjusted.
- n. Confirm that the unit reads down to 87.90MHz (87.50MHz for european version) and up to 107.90MHz (108.00MHz for european version).

Packing Material Parts List



| Index | Symbol No. | Stock No. | Description | Remarks |
|-------|------------|-------------|---------------------|------------------------------|
| | 201 | 56D56866F01 | Packing Tray | TK AK, TK AK, TK UZ |
| | 202 | 56B40230G34 | Sack, Poly | |
| | 203 | 56C58368F33 | Carton, Packing | |
| | | 56S60482F33 | Carton, Packing | |
| | 204 | 56C53420F31 | Carton, Bluk PKG | |
| | 205 | 68R65432F11 | Owner's Manual | AK, TK |
| | | 68R63678F01 | Owner's Manual | |
| | 206 | 85T51069F01 | Antenna, FM | |
| | 207 | 28C42374J02 | Cord, Output | |
| | 208 | 28T51066F01 | Plug, Antenna (A.S) | |
| | 209 | 85T51078F01 | Antenna, Loop | |



Exploded View

Exploded View Parts List

| Index | Symbol No. | Stock No. | Description | Remarks |
|--------|------------|-------------|---------------------------|--|
| A1, C1 | 1 | 03S44205G38 | Screw, T-Tite M3X6 | TK |
| A2 | 2 | 36B53266F01 | Knob, Push D | |
| A2 | 3 | | Panel, Power SW | |
| A3, B5 | 4 | 03S44205G01 | Screw, T-Tite M3X6 | |
| B2 | 5 | 15C56855F01 | Cover, Top | |
| B2, C2 | 6 | 03C42723U01 | Screw, CUP M3X6 | |
| B4, C4 | 7 | 03S44205G16 | Screw, T-Tite M3X6 | |
| B4 | 8 | ※ | Insulator, 50X5 | |
| C2 | 9 | ※ | Ass'y Store PCB | |
| C3 | 10 | 36B63673F01 | Knob, Push 1210 | |
| C3 | 11 | 36B53265F01 | Knob, Push C | TK |
| C4 | 12 | ※ | Bracket, Indicator 1469 | |
| C4 | 13 | 61B63672F01 | Crystal, Indicator 1139 | |
| | | 61B63672F02 | Crystal, Indicator 1139 | |
| C3 | 14 | 29C41045P03 | Lug Wrap Around | |
| C3 | 15 | 36B63674F01 | Knob, Push 1209 | |
| C4 | 16 | ※ | Chassis, Front 1091 | |
| C5 | 17 | 01V64300F60 | Ass'y Panel Front | |
| | | 01V66300F59 | Ass'y Panel Front | |
| C1 | 18 | 15C63669F03 | Cover, Rear 1241 | TK TK AK |
| | | 15C63669F02 | Cover, Rear 1241 | |
| | | 15C63669F01 | Cover, Rear 1241 | |
| D2 | 19 | ※ | Ass'y Power PCB | |
| C3 | 20 | ※ | Panel, Function SW | |
| D1 | 21 | 43B41625J02 | Support, Cord | |
| D2 | 22 | 43A58041F01 | Spacer, 1195 | |
| D4, E5 | 23 | 75A52969F01 | Pad, Trann—leg | |
| D4, E5 | 24 | 03S40036U10 | Screw, T-Tite M3X10 | |
| E1 | 25 | 55T51079F01 | Lock, Antenna Holder | |
| E1 | 26 | 03S40012G41 | Screw, Tapping M3X8 | AK, TK AK, TK UZ AK, TK UZ |
| E2 | 27 | ※ | Bracket, 1470 | |
| E3 | 28 | 15A57286F01 | Cover, 1052 | |
| F3 | 29 | ※ | Ass'y Radio PCB | |
| F4 | 30 | ※ | Chassis, Main 1077 | |
| F5 | 31 | ※ | Cover, Bottom | |
| A4 | 32 | 07B56848F01 | Frame, Panel Side L | |
| C5 | 33 | 07B56849F01 | Frame, Panel Side R | |
| E2 | 34 | 09T52560F01 | Plug, Antenna P2132—A | |
| D2 | PT301 | 25T57254F01 | Trans Power | |
| | | 25T57254F04 | Trans Power | AK, TK AK, TK UZ AK, TK UZ |
| E1 | P301 | 28T43812P04 | Plug, AC Cord | |
| | | 28T40916U01 | Plug, AC Cord | |
| C3 | SW501 | 40T52952F01 | Switch KHC10903 | |
| | SW502 | 40T52952F01 | Switch KHC10903 | |
| | SW503 | 40T52952F01 | Switch KHC10903 | |
| D4 | SW504 | 40T52952F01 | Switch KHC10903 | |
| D3 | SW505 | 40T52952F01 | Switch KHC10903 | |
| B2 | SW701 | 40T57645F01 | Switch, Push SUF12(SHORT) | |

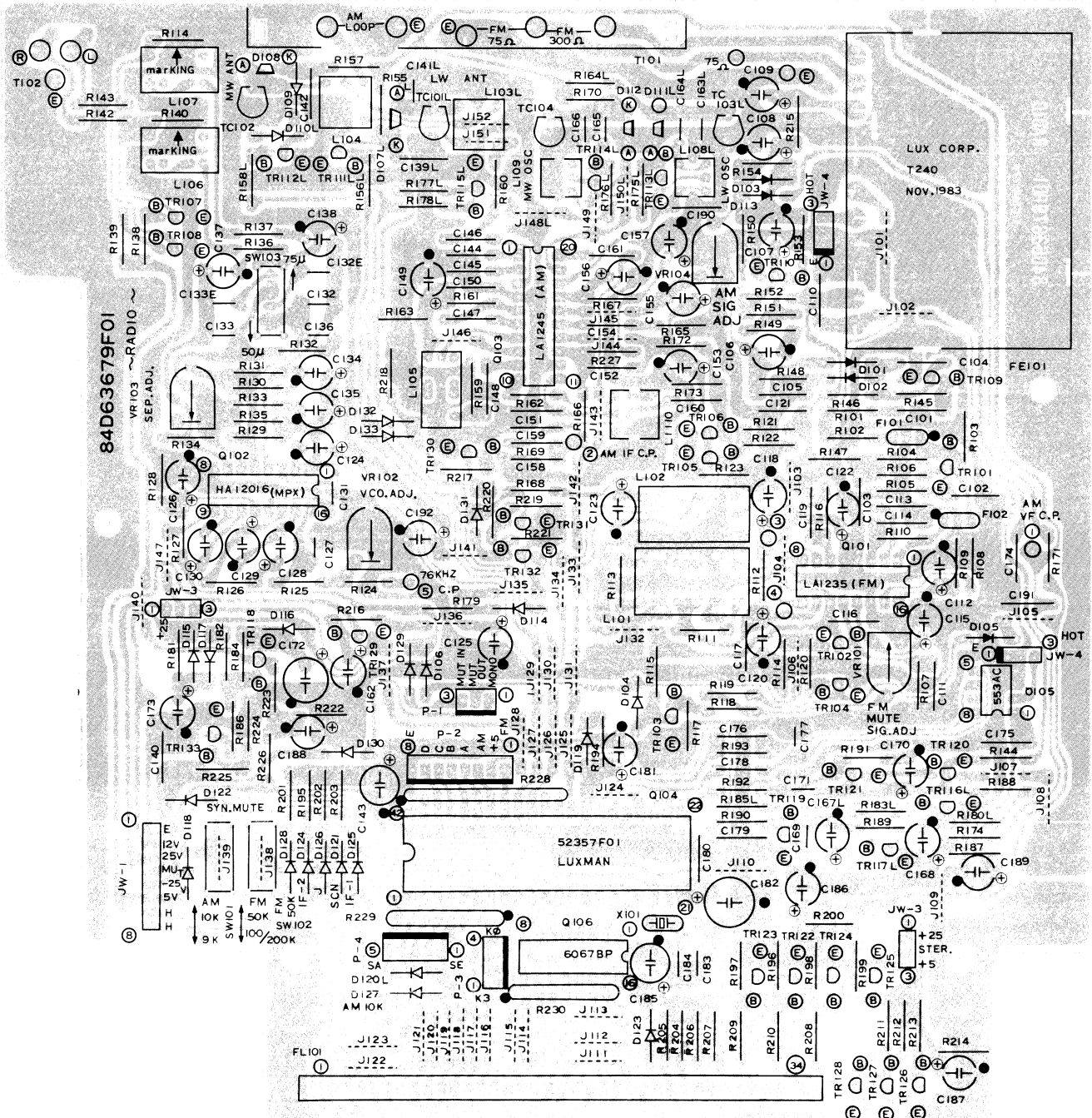
Note: ※ The parts whose parts numbers are not entered will not be supplied.

Destination's Parts List

| Symbol No. | Description | T-240 | | T-240L |
|---|--------------------------|---------------------------|----------------------|----------------------|
| | | UZ 120V USA, CANADA | AK 220V EUROPE | TK 220V FRANCE |
| 13 | Crystal, Indicator | 61B63672F01 | 61B63672F01 | 61B63672F02 |
| 17 | Ass'y, Panel Front | 01V64300F60 | 01V64300F60 | 01V66300F59 |
| 18 | Cover, Rear | 15C63669F01 | 15C63669F02 | 15C63669F03 |
| P301 | Plug, AC Cord | 28T40916U01 | 28T43812P04 | 28T43812P04 |
| PT301 | Trans, Power | 25T57254F04 | 25T57254F01 | 25T57254F01 |
| 34 | Plug, ANT.P2132-A | None Use | 09T52560F01 | 09T52560F01 |
| 203 | Carton, Packing | 56C58368F33 | 56C58368F33 | 56S60482F13 |
| 204 | Carton, Bulk Packing | None Use | 56C53420F31 | 56C53420F31 |
| 205 | Owner's Manual | 68R63676F01 | 68P65432F11 | 68P65432F11 |
| 208 | Plug, Antenna | None Use | 28T51066F01 | 28T51066F01 |
| F302, 303, 304, 305, 306 | Fuse, T-500mA | None Use | 65T42077U13 | None Use |
| SW101, 102, 103 | SW, Slide SW343-1 | None Use | 40T51963F01 | None Use |
| TR111L, 112L, 114L, 115L, 116L | Transistor, 2SC1815Y, GR | None Use | None Use | 48S43525F05 |
| TR113L, 117L | Transistor, 2SA1015Y | None Use | None Use | 48T51118F01 |
| D109L, 110L, 120L | Diode, 1S1555 | None Use | None Use | 48T43189F01 |
| D107L, 111L | Varactor, SVC321SP-A2 | None Use | None Use | 48T52826F01 |
| D128 | Diode, 1S1555 | None Use | 48T43189F01 | None Use |
| TC101L, 103L | Trimmer, TZ03 (Red) | None Use | None Use | 20T47503F02 |
| L103L | Coil, Trans LW OSC | None Use | None Use | 24T57627F01 |
| L108L | Coil, LW ANT | None Use | None Use | 24T56892F01 |
| C132, 133 | Cap, PP | 08T52448F17 | 08T52448F13 | 08T52448F13 |
| C132E, 133E | Cap, PP 0.00056uF | None Use | 08T52448F07 | None Use |
| C139L | Cap, Ce 0.022uF | None Use | None Use | 08S44505P63 |
| C141L | Cap, Ce 47pF | None Use | None Use | 21S40655F19 |
| C163L | Cap, Ce 120pF | None Use | None Use | 21S40655F24 |
| C164L | Cap, Ce 220pF | None Use | None Use | 21S40655F27 |
| C167L | Cap, EI 2.2uF 50V | None Use | None Use | 23S40657F29 |
| R156L, 158L, 175L, 176L, 178L, R180L, 183L | Res, Fc 22K 1/4W | None Use | None Use | 06S44593P97 |
| R155L, 164L | Res, Fc 100K 1/4W | None Use | None Use | 06S44594P14 |
| R177L | Res, Fc 10K 1/4W | None Use | None Use | 06S44593P89 |
| R185L | Res, Fc 47K 1/4W | None Use | None Use | 06S44594P06 |
| R306 | Res, 2.2M 1/2W | 06D40802G44 | None Use | None Use |

PCB

Radio PCB

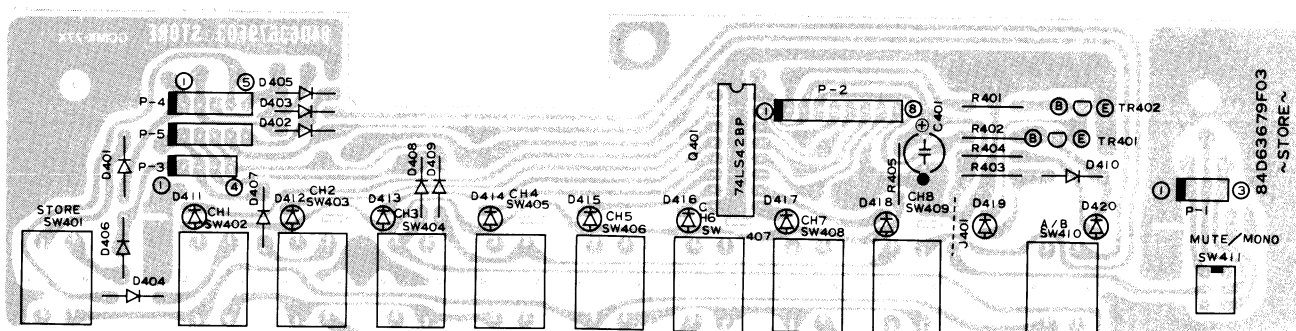


Remarks

Resistor: Rd . . . Carbon, Ne . . . Network

Capacitor: El . . . Electrolytic, Ce . . . Ceramic, My . . . Mylar, Pp . . . Polypropylene

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PCB Parts List

Radio PCB Parts List

| Symbol No. | Stock No. | Description |
|---------------------|-------------|----------------------|
| (Filter) | | |
| F101 | 91T51130F01 | SFE10.7MM |
| F102 | 91T51130F01 | SFE10.7MM |
| (FL Meter) | | |
| FL101 | 65T53335F01 | FIP8BM4 |
| (Switch) | | |
| SW101 | 40T51963F01 | Slide (AK) |
| SW102 | 40T51963F01 | Slide (AK) |
| SW103 | 40T51963F01 | Slide (AK) |
| (Variable Resistor) | | |
| VR101 | 18C42061J13 | 5K |
| VR102 | 18C42061J12 | 2K |
| VR103 | 18C42061J15 | 50K |
| VR104 | 18C42061J13 | 5K |
| (Frontend) | | |
| FE101 | 77T51132F01 | UN5AA10 |
| (Terminal) | | |
| T101 | 09T60383F01 | 5P |
| T102 | 09T50231F01 | 2P |
| (Coil) | | |
| L101 | 24T51128F01 | FM DET LA1457 |
| L102 | 91T51083F01 | Anti Birdy |
| L103L | 24T57627F01 | Trans LW OSC (TK) |
| L104 | 24T51125F01 | ANT(AM) LA1210 |
| L105 | 24T51126F01 | IF(450kHz) |
| L106 | 91T53325F01 | LA1196 |
| L107 | 91T53325F01 | LA1196 |
| L108L | 24T56892F01 | LW ANT (TK) |
| L109 | 24T53326F01 | AM OSC |
| L110 | 24T53327F01 | IF |
| (Trimmer) | | |
| TC101L | 20T47503F02 | (Tm) TZ03 (RED) (TK) |
| TC102 | 20T47503F02 | (Tm) TZ03 (RED) |
| TC103L | 20T47503F03 | (Tm) TZ03 (RED) (TK) |
| TC104 | 20T47503F02 | (Tm) TZ03 (RED) |
| (X-Tal) | | |
| X101 | 48T55072F01 | (4.5MHZ)-M |
| (IC) | | |
| Q101 | 51T51095F01 | LA1235 |
| Q102 | 51T56889F01 | HA12016 |
| Q103 | 51T53323F01 | LA1245 |
| Q104 | 51T52357F01 | UPD1704C-534 |
| Q105 | 51T43271F01 | UPB553AC |
| Q106 | 51T53316F01 | TC5067BP |
| (Transistor) | | |
| TR101 | 48S40732P02 | 2SC1674 L |
| TR102 | 48S43525F05 | 2SC1815-Y,GR |
| TR103 | 48S43525F05 | 2SC1815-Y,GR |
| TR104 | 48S43525F05 | 2SC1815-Y,GR |
| TR105 | 48S43525F05 | 2SC1815-Y,GR |
| TR106 | 48S43525F05 | 2SC1815-Y,GR |
| TR107 | 48T51878F01 | 2SC2878 A,B |
| TR108 | 48T51878F01 | 2SC2878 A,B |
| TR109 | 48S40732P02 | 2SC1674 L |
| TR110 | 48S43525F05 | 2SC1815-Y,GR |
| TR111L | 48S43525F05 | 2SC1815-Y,GR (TK) |

| Symbol No. | Stock No. | Description |
|--------------------|-------------|-------------------|
| TR112L | 48S43525F05 | 2SC1815-Y,GR (TK) |
| TR113L | 48T51118F01 | 2SA1015-Y (TK) |
| TR114L | 48S43525F05 | 2SC1815-Y,GR (TK) |
| TR115L | 48S43525F05 | 2SC1815-Y,GR (TK) |
| TR116L | 48S43525F05 | 2SC1815-Y,GR (TK) |
| TR117L | 48T51118F01 | 2SA1015-Y (TK) |
| TR118 | 48T51118F01 | 2SA1015-Y |
| TR119 | 48T55348F01 | 2SC1645B |
| TR120 | 48S43525F05 | 2SC1815-Y,GR |
| TR121 | 48S43525F05 | 2SC1815-Y,GR |
| TR122 | 48T51118F01 | 2SA1015-Y |
| TR123 | 48T51118F01 | 2SA1015-Y |
| TR124 | 48T51118F01 | 2SA1015-Y |
| TR125 | 48T51118F01 | 2SA1015-Y |
| TR126 | 48S43525F05 | 2SC1815-Y,GR |
| TR127 | 48S43525F05 | 2SC1815-Y,GR |
| TR128 | 48S43525F05 | 2SC1815-Y,GR |
| TR129 | 48S43525F05 | 2SC1815-Y,GR |
| TR130 | 48S43525F05 | 2SC1815-Y,GR |
| TR131 | 48T51118F01 | 2SA1015-Y |
| TR132 | 48S43525F05 | 2SC1815-Y,GR |
| TR133 | 48S43525F05 | 2SC1815-Y,GR |
| (Diode & Varactor) | | |
| D101 | 48T57425F01 | 1M60FM |
| D102 | 48T57425F01 | 1M60FM |
| D103 | 48T57425F01 | 1M60FM |
| D104 | 48T43189F01 | 1S1555 |
| D105 | 48T57425F01 | 1M60FM |
| D106 | 48T43189F01 | 1S1555 |
| D107L | 48T52826F01 | SVC321 SP (TK) |
| D108 | 48T52826F01 | SVC321 SP |
| D109L | 48T43189F01 | 1S1555 (TK) |
| D110L | 48T43189F01 | 1S1555 (TK) |
| D111L | 48T52826F01 | SVC321 SP (TK) |
| D112 | 48T52826F01 | SVC321 SP |
| D113 | 48T57425F01 | 1M60FM |
| D114 | 48T43189F01 | 1S1555 |
| D115 | 48T43189F01 | 1S1555 |
| D116 | 48T43189F01 | 1S1555 |
| D117 | 48T43189F01 | 1S1555 |
| D118 | 48T43189F01 | 1S1555 |
| D119 | 48T43189F01 | 1S1555 |
| D120L | 48T43189F01 | 1S1555 (TK) |
| D122 | 48T43189F01 | 1S1555 |
| D123 | 48T43189F01 | 1S1555 |
| D124 | 48T43189F01 | 1S1555 |
| D125 | 48T43189F01 | 1S1555 |
| D127 | 48T43189F01 | 1S1555 |
| D128 | 48T43189F01 | 1S1555 (AK) |
| D129 | 48T43189F01 | 1S1555 |
| D130 | 48T43189F01 | 1S1555 |
| D131 | 48T43189F01 | 1S1555 |
| D132 | 48T43189F01 | 1S1555 |
| D133 | 48T43189F01 | 1S1555 |
| (Capacitor) | | |
| C101 | 08S44505P63 | (Ce) 22000pF |
| C102 | 08S44505P63 | (Ce) 22000pF |
| C103 | 08S44505P63 | (Ce) 22000pF |

T-240/T-240L

| Symbol No. | Stock No. | Description | | Symbol No. | Stock No. | Description | |
|------------|-------------|------------------|---------|------------|-------------|-------------------------|------|
| C104 | 08S44505P49 | (Ce) 1000pF | | C158 | 08S44505P63 | (Ce) 22000pF | |
| C105 | 08S44505P49 | (Ce) 1000pF | | C159 | 08S44505P53 | (Ce) 2200pF | |
| C106 | 23S40657F27 | (EI) 0.47uF 50V | | C160 | 08S44505P63 | (Ce) 22000pF | |
| C107 | 23S40657F28 | (EI) 1.0uF 50V | | C161 | 08S44505P63 | (Ce) 22000pF | |
| C108 | 23S40657F10 | (EI) 10uF 26V | | C162 | 23S40657F18 | (EI) 22uF 25V | |
| C109 | 23S40657F10 | (EI) 10uF 26V | | C163L | 21S40655F24 | (Ce) 120pF | (TK) |
| C110 | 08S44505P61 | (Ce) 10000pF | | C164L | 21S40655F27 | (Ce) 220pF | (TK) |
| C111 | 08S44505P63 | (Ce) 22000pF | | C165 | 08T52448F01 | (Pp) 0.00033uF | |
| C112 | 23S40657F27 | (EI) 0.47uF 50V | | C166 | 21S40655F11 | (Ce) 10pF | |
| C113 | 08S44505P63 | (Ce) 22000pF | | C167L | 23S40657F29 | (EI) 2.2uF 50V | (TK) |
| C114 | 08S44505P63 | (Ce) 22000pF | | C168 | 23S40657F16 | (EI) 4.7uF 25V | |
| C115 | 23S40657F16 | (EI) 4.7uF 25V | | C169 | 08S40805F21 | (Ce) 22000pF | |
| C116 | 08S44505P63 | (Ce) 22000pF | | C170 | 23S40657F16 | (EI) 4.7uF 25V | |
| C117 | 08S44505P63 | (Ce) 22000pF | | C171 | 08S40805F21 | (Ce) 22000pF | |
| C118 | 23S40657F28 | (EI) 1.0uF 50V | | C172 | 23S41198U41 | (EI) 220uF 16V | |
| C119 | 08S44505P37 | (Ce) 100pF | | C173 | 23S40657F10 | (EI) 10uF 26V | |
| C120 | 23S40657F14 | (EI) 100uF 16V | | C175 | 08S44505P63 | (Ce) 22000pF | |
| C121 | 08S44505P63 | (Ce) 22000pF | | C176 | 08S44505P41 | (Ce) 220pF | |
| C122 | 23S40657F14 | (EI) 100uF 16V | | C177 | 21S40655F11 | (Ce) 10pF | |
| C123 | 23S40657F12 | (EI) 33uF 16V | | C178 | 08S44505P63 | (Ce) 22000pF | |
| C124 | 23S40657F10 | (EI) 10uF 26V | | C179 | 08S44505P49 | (Ce) 1000pF | |
| C125 | 23S40657F10 | (EI) 10uF 26V | | C180 | 08S44505P63 | (Ce) 22000pF | |
| C126 | 23S40657F16 | (EI) 4.7uF 25V | | C181 | 23S40657F10 | (EI) 10uF 26V | |
| C127 | 08T52448F13 | (Pp) 1000pF | | C182 | 23S41198U62 | (EI) 1000uF 6.3V | |
| C128 | 23S40657F30 | (EI) 3.3uF 50V | | C183 | 21S40655F15 | (Ce) 22pF | |
| C129 | 23S40657F28 | (EI) 1.0uF 50V | | C184 | 21S40655F15 | (Ce) 22pF | |
| C130 | 23S40657F30 | (EI) 3.3uF 50V | | C185 | 23S40657F04 | (EI) 220uF 6.3V | |
| C131 | 08S40656F21 | (My) 47000pF | | C186 | 23S40657F10 | (EI) 10uF 26V | |
| C132 | 08T52448F13 | (Pp) 1500pF | (AK,TK) | C187 | 23S40657F10 | (EI) 10uF 26V | |
| C132 | 08T52448F17 | (Pp) 1500pF | (UZ) | C188 | 23S40657F28 | (EI) 1.0uF 50V | |
| C132E | 08T52448F07 | (Pp) 1500pF | (AK) | C189 | 23S40657F20 | (EI) 47uF 25V | |
| C133 | 08T52448F13 | (Pp) 1500pF | (AK,TK) | C190 | 08S44505P63 | (Ce) 22000pF | |
| C133 | 08T52448F17 | (Pp) 1500pF | (UZ) | C191 | 08S44505P61 | (Ce) 10000pF | |
| C133E | 08T52448F07 | (Pp) 1500pF | (AK) | C192 | 23S40657F12 | (EI) 33uF 16V | |
| C134 | 23S40657F18 | (EI) 22uF 25V | | (Resistor) | | | |
| C135 | 23S40657F18 | (EI) 22uF 25V | | R101 | 06S44593P69 | (Rd) 1.5K Ω 1/4W | |
| C136 | 08T52448F15 | (Pp) 1200pF | | R102 | 06S44593P41 | (Rd) 100 Ω 1/4W | |
| C137 | 23S40657F30 | (EI) 3.3uF 50V | | R103 | 06S44593P57 | (Rd) 470 Ω 1/4W | |
| C138 | 23S40657F30 | (EI) 3.3uF 50V | | R104 | 06S44593P75 | (Rd) 2.7K Ω 1/4W | |
| C139L | 08S44505P63 | (Ce) 0.022uF 50V | (TK) | R105 | 06S44593P53 | (Rd) 330 Ω 1/4W | |
| C140 | 08S44505P63 | (Ce) 22000pF | | R106 | 06S44593P53 | (Rd) 330 Ω 1/4W | |
| C141L | 21S40655F19 | (Ce) 47pF | (TK) | R107 | 06S44594P06 | (Rd) 47K Ω 1/4W | |
| C142 | 08S44505P61 | (Ce) 10000pF | | R108 | 06S44593P89 | (Rd) 10K Ω 1/4W | |
| C143 | 23S40657F18 | (EI) 22uF 25V | | R109 | 06S44594P12 | (Rd) 82K Ω 1/4W | |
| C144 | 08S44505P63 | (Ce) 22000pF | | R110 | 06S44593P53 | (Rd) 330 Ω 1/4W | |
| C145 | 08S44505P63 | (Ce) 22000pF | | R111 | 06S44593P83 | (Rd) 5.6K Ω 1/4W | |
| C146 | 08S44505P63 | (Ce) 22000pF | | R112 | 06S44593P95 | (Rd) 18K Ω 1/4W | |
| C147 | 08S44505P63 | (Ce) 22000pF | | R113 | 06S44593P73 | (Rd) 2.2K Ω 1/4W | |
| C148 | 08S44505P63 | (Ce) 22000pF | | R114 | 06S44593P81 | (Rd) 4.7K Ω 1/4W | |
| C149 | 23S40657F10 | (EI) 10uF 26V | | R115 | 06S44593P81 | (Rd) 4.7K Ω 1/4W | |
| C150 | 08S44505P63 | (Ce) 22000pF | | R116 | 06S44593P87 | (Rd) 8.2K Ω 1/4W | |
| C151 | 08S44505P49 | (Ce) 1000pF | | R117 | 06S44593P89 | (Rd) 10K Ω 1/4W | (TK) |
| C152 | 08S44505P63 | (Ce) 22000pF | | R118 | 06S44593P89 | (Rd) 10K Ω 1/4W | |
| C153 | 23S40657F14 | (EI) 100uF 16V | | R119 | 06S44593P81 | (Rd) 4.7K Ω 1/4W | |
| C154 | 08S44505P63 | (Ce) 22000pF | | R120 | 06S44594P06 | (Rd) 47K Ω 1/4W | |
| C155 | 23S40657F27 | (EI) 0.47uF 50V | | R121 | 06S44593P95 | (Rd) 18K Ω 1/4W | |
| C156 | 23S40657F28 | (EI) 1.0uF 50V | | R122 | 06S44593P97 | (Rd) 22K Ω 1/4W | |
| C157 | 23S40657F30 | (EI) 3.3uF 50V | | R123 | 06S44593P73 | (Rd) 2.2K Ω 1/4W | |

| Symbol No. | Stock No. | Description |
|------------|-------------|----------------------|
| R124 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R125 | 06S44593P85 | (Rd) 6.8KΩ 1/4W |
| R126 | 06S44593P65 | (Rd) 1KΩ 1/4W |
| R127 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R128 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R129 | 06S44593P99 | (Rd) 27KΩ 1/4W |
| R130 | 06S44593P71 | (Rd) 1.8KΩ 1/4W |
| R131 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R132 | 06S44593P53 | (Rd) 330Ω 1/4W |
| R133 | 06S44593P71 | (Rd) 1.8KΩ 1/4W |
| R134 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R135 | 06S44593P99 | (Rd) 27KΩ 1/4W |
| R136 | 06S44593P77 | (Rd) 3.3KΩ 1/4W |
| R137 | 06S44593P77 | (Rd) 3.3KΩ 1/4W |
| R138 | 06S44593P97 | (Rd) 22KΩ 1/4W |
| R139 | 06S44593P97 | (Rd) 22KΩ 1/4W |
| R140 | 06S44593P77 | (Rd) 3.3KΩ 1/4W |
| R141 | 06S44593P77 | (Rd) 3.3KΩ 1/4W |
| R142 | 06S44593P41 | (Rd) 100Ω 1/4W |
| R143 | 06S44593P41 | (Rd) 100Ω 1/4W |
| R144 | 06S44593P97 | (Rd) 22KΩ 1/4W |
| R145 | 06S44594P26 | (Rd) 330KΩ 1/4W |
| R146 | 06S44593P77 | (Rd) 3.3KΩ 1/4W |
| R147 | 06S44593P41 | (Rd) 100Ω 1/4W |
| R148 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R149 | 06S44593P75 | (Rd) 2.7KΩ 1/4W |
| R150 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R151 | 06S44594P30 | (Rd) 470KΩ 1/4W |
| R152 | 06S44593P77 | (Rd) 3.3KΩ 1/4W |
| R153 | 06S44594P12 | (Rd) 82KΩ 1/4W |
| R155L | 06S44594P02 | (Rd) 33KΩ 1/4W |
| R156L | 06S44594P14 | (Rd) 100KΩ 1/4W (TK) |
| R156I | 06S44593P97 | (Rd) 22KΩ 1/4W (TK) |
| R157 | 06S44593P97 | (Rd) 22KΩ 1/4W |
| R158L | 06S44593P97 | (Rd) 22KΩ 1/4W (TK) |
| R159 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R160 | 06S44593P41 | (Rd) 100Ω 1/4W |
| R161 | 06S44593P79 | (Rd) 3.9KΩ 1/4W |
| R162 | 06S44593P57 | (Rd) 470Ω 1/4W |
| R163 | 06S44593P49 | (Rd) 220Ω 1/4W |
| R164L | 06S44594P14 | (Rd) 100KΩ 1/4W (TK) |
| R165 | 06S44593P39 | (Rd) 82Ω 1/4W |
| R166 | 06S44593P75 | (Rd) 2.7KΩ 1/4W |
| R167 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R168 | 06S44593P35 | (Rd) 56Ω 1/4W |
| R169 | 06S44593P99 | (Rd) 27KΩ 1/4W |
| R170 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R171 | 06S44593P81 | (Rd) 4.7KΩ 1/4W |
| R172 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R173 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R174 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R175L | 06S44593P97 | (Rd) 22KΩ 1/4W (TK) |
| R176L | 06S44593P97 | (Rd) 22KΩ 1/4W (TK) |
| R177L | 06S44593P89 | (Rd) 10KΩ 1/4W (TK) |
| R178L | 06S44593P97 | (Rd) 22KΩ 1/4W (TK) |
| R179 | 06S44593P65 | (Rd) 1KΩ 1/4W |
| R180L | 06S44593P97 | (Rd) 22KΩ 1/4W (TK) |
| R181 | 06S44594P30 | (Rd) 470KΩ 1/4W |

| Symbol No. | Stock No. | Description |
|------------|-------------|---------------------|
| R182 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R183L | 06S44593P97 | (Rd) 22KΩ 1/4W (TK) |
| R184 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R185L | 06S44594P06 | (Rd) 47KΩ 1/4W (TK) |
| R186 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R187 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R188 | 06S44593P81 | (Rd) 4.7KΩ 1/4W |
| R189 | 06S44593P73 | (Rd) 2.2KΩ 1/4W |
| R190 | 06S44593P65 | (Rd) 1KΩ 1/4W |
| R191 | 06S44593P59 | (Rd) 560Ω 1/4W |
| R192 | 06S44593P65 | (Rd) 1KΩ 1/4W |
| R193 | 06S44594P22 | (Rd) 220KΩ 1/4W |
| R194 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R195 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R196 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R197 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R198 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R199 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R200 | 06S44593P73 | (Rd) 2.2KΩ 1/4W |
| R201 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R202 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R203 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R204 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R205 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R206 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R207 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R208 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R209 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R210 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R211 | 06S44593P93 | (Rd) 15KΩ 1/4W |
| R212 | 06S44593P97 | (Rd) 22KΩ 1/4W |
| R213 | 06S44594P02 | (Rd) 33KΩ 1/4W |
| R214 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R215 | 06S44594P02 | (Rd) 33KΩ 1/4W |
| R216 | 06S44593P81 | (Rd) 4.7KΩ 1/4W |
| R217 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R218 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R219 | 06S44593P97 | (Rd) 22KΩ 1/4W |
| R220 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R221 | 06S44593P73 | (Rd) 2.2KΩ 1/4W |
| R222 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R223 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R224 | 06S44594P06 | (Rd) 47KΩ 1/4W |
| R225 | 06S44593P97 | (Rd) 22KΩ 1/4W |
| R226 | 06S44594P14 | (Rd) 100KΩ 1/4W |
| R227 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R228 | 51T51133F11 | (Network) 100KX11 |
| R229 | 51T51133F01 | (Network) 100KX7 |
| R230 | 51T51133F01 | (Network) 100KX7 |

Power PCB Parts List

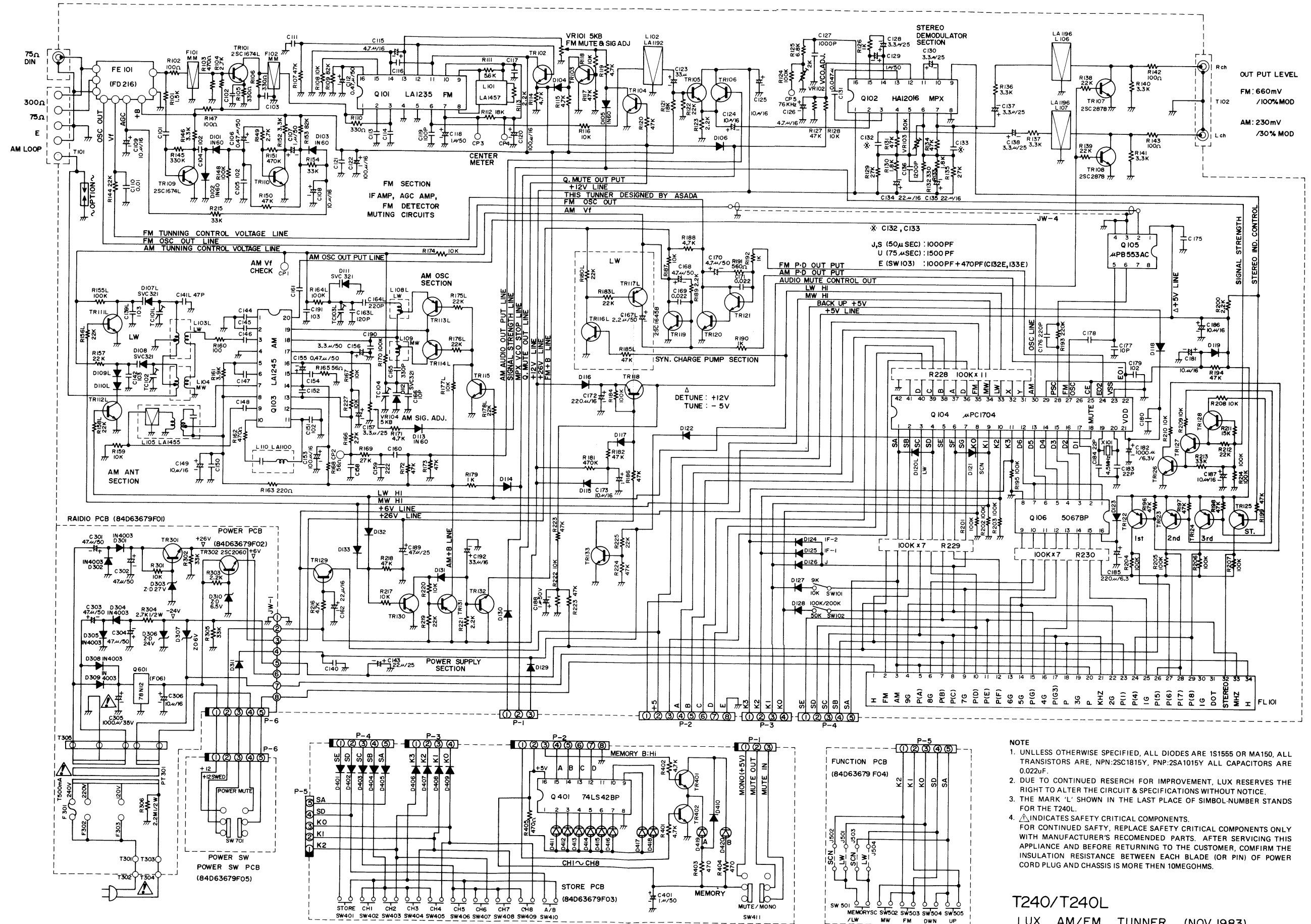
| Symbol No. | Stock No. | Description |
|------------|-------------|--------------|
| (Fuse) | | |
| F302 | 65T42077U13 | T-500mA (AK) |
| F303 | 65T42077U13 | T-500mA (AK) |
| F304 | 65T42077U13 | T-500mA (AK) |
| F305 | 65T42077U13 | T-500mA (AK) |

| Symbol No. | Stock No. | Description |
|-----------------|-------------|----------------------|
| F306 | 65T42077U13 | T-500mA (AK) |
| (IC) | | |
| Q601 | 51T56583F07 | VOLTAGE L78N 12V |
| (Transistor) | | |
| TR301 | 48T55181F01 | 2SC1740 R,S |
| TR302 | 48T55874F01 | 2SC2060 R,Q |
| (Diode & Zener) | | |
| D301 | 48T55186F01 | GP10D -AX |
| D302 | 48T55186F01 | GP10D -AX |
| D303 | 48T52739F95 | HZ27 -2 -AX |
| D304 | 48T55186F01 | GP10D -AX |
| D305 | 48T55186F01 | GP10D -AX |
| D306 | 48T52739F92 | HZ24 -2 -AX |
| D307 | 48T52739F40 | HZ 6C-1 -AX |
| D308 | 48T55186F01 | GP10D -AX |
| D309 | 48T55186F01 | GP10D -AX |
| D310 | 48T52739F43 | HZ 7A-1 -AX |
| D311 | 48T43189F01 | 1S1555 |
| (Capacitor) | | |
| C301 | 23S40657F35 | (EI) 47uF 50V |
| C302 | 23S40657F35 | (EI) 47uF 50V |
| C303 | 23S40657F35 | (EI) 47uF 50V |
| C304 | 23S40657F35 | (EI) 47uF 50V |
| C305 | 23S41198U66 | (EI) 1000uF 35V |
| C306 | 23S40657F10 | (EI) 10uF 26V |
| (Resistor) | | |
| R301 | 06S44593P89 | (Rd) 10KΩ 1/4W |
| R302 | 06S44594P02 | (Rd) 33KΩ 1/4W |
| R303 | 06S44593P73 | (Rd) 2.2KΩ 1/4W |
| R304 | 06D40801G73 | (Rd) 2.7KΩ 1/2W |
| R305 | 06S44594P02 | (Rd) 33KΩ 1/4W |
| R306 | 06D40802G44 | (Rd) 2.2MΩ 1/2W (UZ) |

Store PCB Parts List

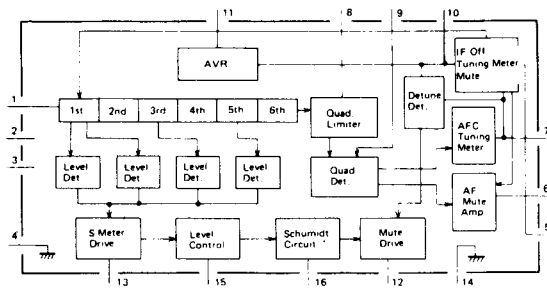
| Symbol No. | Stock No. | Description |
|--------------|-------------|-----------------|
| (Switch) | | |
| SW401-410 | 40T52952F01 | KHC10903 |
| SW411 | 40T58173F01 | SPH221A |
| (IC) | | |
| Q401 | 51T53321F01 | M74LS42P |
| (Transistor) | | |
| TR401 | 48T55181F01 | 2SC1740 R,S |
| TR402 | 48T55181F01 | 2SC1740 R,S |
| (Diode) | | |
| D401-410 | 48T43189F01 | 1S1555 |
| (Capacitor) | | |
| C401 | 23S40657F28 | (EI) 1.0uF 50V |
| (Resistor) | | |
| R401 | 06S44593P81 | (Rd) 4.7KΩ 1/4W |
| R402 | 06S44593P81 | (Rd) 4.7KΩ 1/4W |
| R403 | 06S44593P57 | (Rd) 470Ω 1/4W |
| R404 | 06S44593P57 | (Rd) 470Ω 1/4W |
| R405 | 06S44593P57 | (Rd) 470Ω 1/4W |

Schematic Diagram

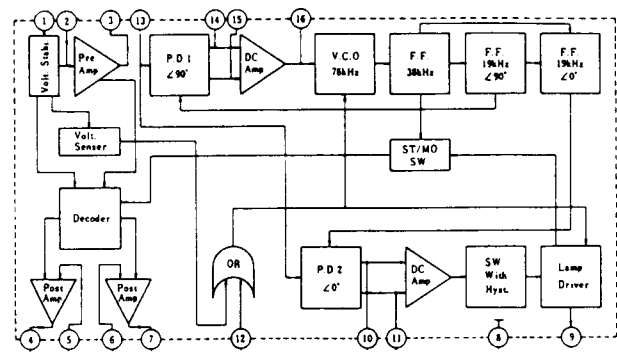


IC Handling Guide

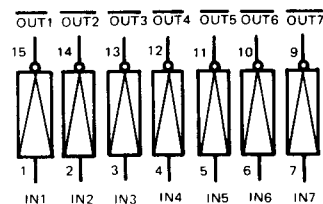
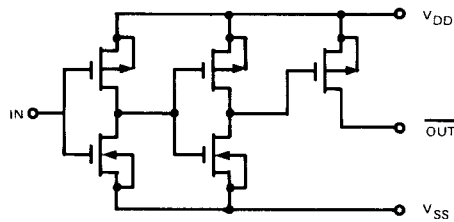
LA-1235 (MONOLITHIC LINEAR IC)



HA-12016 (FM STEREO MULTIPLEX DECODER)

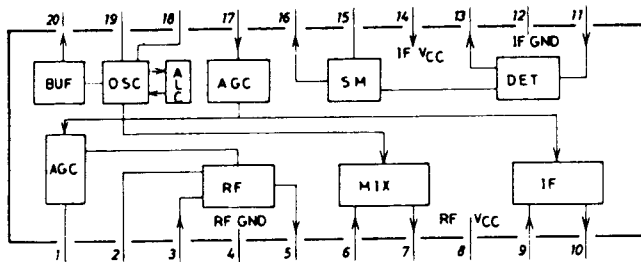


TC5067BP (7-HIGH VOLTAGE BUFFER/INVERTING TYPE)

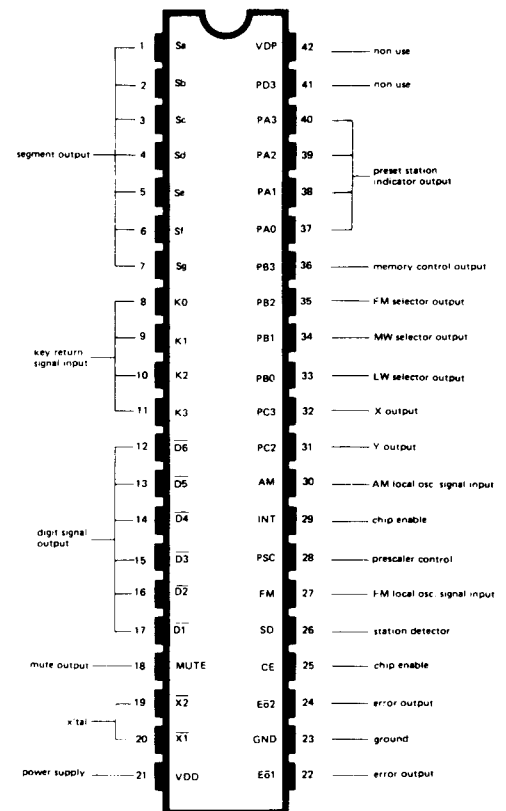


VDD : 16. VSS : 8

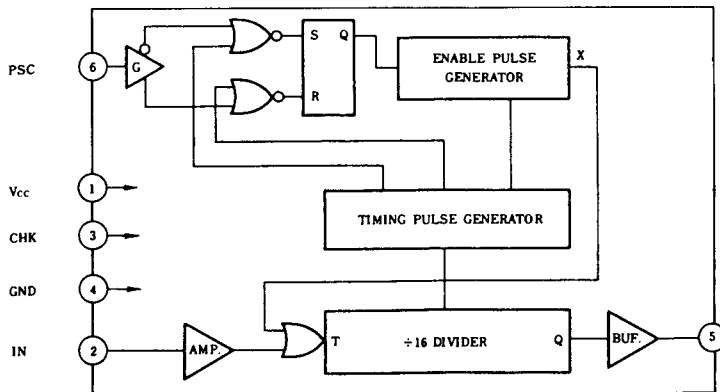
LA-1245 (AM IC)



μPC1704 (SYNTHESIZER IC)



μPB553AC (150MHz PRESCALER)



Specifications

FM SECTION

(IEEE/THF Standard)

| | |
|---|--------------------------------------|
| Usable Sensitivity: | 10.3dBf, 1.8 μ V (300 Ω) |
| 50dB Quieting Sensitivity (70 μ sec): | 13.7dBf, 2.2 μ V (300 Ω) |
| Alternate Channel Selectivity: | 80dB |
| AM Suppression: | 47dB |
| S/N (Signal-to-Noise Ratio) | Mono 76dB |
| at 65dB: | Stereo 74dB |
| Stereo Separation at 1,000Hz: | 50dB |
| Capture Ratio: | 1.5dB |
| Image Response Ratio: | 80dB |
| IF Response Ratio: | 100dB |
| Spurious Response Ratio: | 100dB |
| Frequency Response: | 30 — 15kHz : 0.5dB |
| Distortion at 65dBf: | 1kHz Mono 0.03% |
| | 1kHz Stereo 0.1% |
| Subcarrier Product Ratio: | 60dB |
| SCA Rejection Ratio: | 60dB |
| Muting Threshold: | 5 μ V |
| Output Level: | 660mV |

AM SECTION

| | |
|---------------------------------|---------------|
| Usable Sensitivity at 1MHz, | |
| 400Hz 30% Modulation: | 500 μ V/m |
| Image Response Ratio at 1MHz: | 43dB |
| IF Response Ratio at 1MHz: | 50dB |
| Signal-to-Noise Ratio at 1MHz: | 50dB |
| Distortion at 1MHz 10 μ V/m | |
| 400Hz/30% Modulation: | 0.3% |

GENERAL

| | |
|--------------------|---|
| Power Consumption: | 7 Watts |
| Dimensions: | 453mm(W) x 77mm(H) x 244mm(D) (17.8"(W) x 3.0"(H) x 9.6"(D)) |
| Weight: | Net 3.0kg (6.6 lbs.) |

* Specifications and appearance design are subject to change without notice.



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